

REMARKS

Claims 1-4, 6-7, and 9-28 are pending in the application. Claims 5 and 8 are canceled.
Claims 13-21 and 24-28 are withdrawn from consideration by the Examiner.

Entry of the Amendment along with reconsideration and review of the claims on the merits are respectfully requested.

Formal Matters

Applicants appreciate the Examiner's acknowledgement of Applicants' claim for foreign priority and receipt of a certified copy of the priority document in this National Stage application from the International Bureau.

Applicants also appreciate the Examiner's consideration of the Information Disclosure Statements filed on December 28, 2001, and April 16, 2004.

Claim Objection

The Examiner objects to Claim 11 based on a misspelling of "comprises".

In response, Applicants correct the misspelling. Reconsideration and withdrawal of the objection is respectfully requested.

Claim Rejection - 35 U.S.C. § 112

Claims 2-4 and 6 are rejected under 35 U.S.C. §112, second paragraph, as assertedly being indefinite.

The Examiner asserts that in claims 2-4 the language of "in elemental cobalt basis" is

vague and indefinite.

The Examiner asserts that in claim 6 the language of "a parallel filament of ten pieces or less of adjoining filaments" is vague and does not clearly describe the structural configuration of the fiber aggregate.

Applicants respond as follows.

Regarding Claims 2-4, Applicants submit that the specification, for example, in the Examples clearly shows that "the coating layer contains metallic cobalt and/or cobalt oxide in an amount of 5% by weight or more in elemental cobalt basis." (see Claim 2). However, in order to advance prosecution without conceding the merits of the rejection, Applicants amend the phrase to recite "~~in~~ of elemental cobalt basis" in Claims 2-4 to overcome the indefiniteness rejection.

Regarding the phrase "a parallel filament of ten pieces or less of adjoining filaments" in Claim 6, Applicants point to support in the specification, for example, at pages 16-17:

"Although the structure of the fiber aggregate made of filaments substantially not bundled together is not specifically limited..., preferred is a fiber aggregate made of ten pieces or less of filaments which are arranged in parallel with a space of ($\sqrt{2}-1$)d." (see page 16, lines 18-22).

"In the present invention, the parallel filaments mean adjoining filaments which are arranged with an included angle of 30° or less. The included angle is an angle defined by filament directions." (see page 17, lines 10-12).

However, in order to advance prosecution without conceding the merits of the rejection, Applicants amend the phrase to recite “a single filament or ten pieces or less of filaments” in Claim 6, as shown in the Listing of Claims, to overcome the indefiniteness rejection. Support can be found, for example, at page 15, lines 5-7; page 16, lines 20-22 and 28-29; and page 18, lines 9-10 and 14. No new matter is added.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the indefiniteness rejections.

Claim Rejections - 35 U.S.C. § 103

A. Claims 1-10, 12, and 22-23 are rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Yoshikawa et al (U.S. Pat. No. 4,872,932) in view of Marshall et al (U.S. Pat. No. 4,397,985).

Regarding independent Claim 1, the Examiner cites Yoshikawa as teaching a rubbery composite material comprising a substrate and a rubber composition bonded thereto, said rubbery composite being prepared by metallizing a substrate with a thin film of a metal such as cobalt or an alloy thereof wherein the film has a thickness of 10 angstroms to 100 μm . However, the Examiner recognizes that Yoshikawa does not teach polyester fiber.

The Examiner asserts that the formation of tires, belts and hoses utilizing polyester fiber aggregates is known in the art and, enhancing the adherence of said polyester fiber aggregates to rubber composite materials using a cobalt compound is also known in the art as evidenced by the teachings of Marshall. The Examiner cites Marshall as teaching a polyester yarn used in reinforcing rubber in the formation of tires and belts, said yarn being

treated with a cobalt containing solution that significantly improves the fiber to rubber adhesion of the cords treated therewith.

As to the fibers being substantially non-bundled in claims 5-7, the Examiner states that these claims do not preclude the presence of some bundling.

Furthermore, in the absence of a single fiber or monofilament, the Examiner asserts that it is not readily apparent to her how the multifilaments can be "substantially non-bundled". The Examiner indicates that she presumes that the multifilaments have to be "gathered" in some way after spinning or drawing, and upon incorporation in the rubbery composite. The Examiner concludes that in the absence of clear evidence to the contrary, she has reason to believe that the fibers are "substantially non-bundled".

B. Claim 11 is rejected under 35 U.S.C. §103(a) as assertedly being unpatentable over Yoshikawa et al in view of Marshall et al, further in view of Shindo et al (U.S. Pat. No. 5,049,447).

The Examiner recognizes that neither Yoshikawa or Marshall teach the specific properties of the polyester. However, the Examiner cites Shindo as teaching polyester fiber for use in the production of tire cords and belts, said polyester fiber being essentially as claimed in claim 11.

Applicants respond as follows.

Without admitting that the rejection is appropriate, Claim 1 is amended to incorporate the subject matter of Claim 5, wherein the organic fiber or the inorganic fiber is substantially non-bundled. Claim 5 is now canceled.

Yoshikawa states that "The present method allows for bonding into a composite structure of materials of the type, shape, and size which are otherwise difficult to bond to a rubber composition in the prior art. " (see column 4, lines 42-45.). "The substrates which can be used in the present invention are not particularly limited with respect to their material type, shape, and size." (see column 5, lines 18-20.). And, "The particular material, shape, and size of the substrate used may be properly selected depending on the intended application. (see column 5, lines 38-41).

However, Yoshikawa also states "Examples of the materials of which the substrates are made up include metals such as steel, stainless steel, aluminum, copper, and copper alloys; thermoplastic resins, for example, polyesters such as polyallylate, polyethylene terephthalate polybutylene terephthalate, and polyoxybenzoyl polyamides such as 6-nylon, 6,6-nylon, and aromatic polyamides, polyethers such as polyacetal, polyphenylene oxide, polyether ether ketone, and polyphenylene sulfide, polysulfones such as polysulfone and polyether sulfone, polyimides such as polyimide, polyether-imide, polyamide-imide, and polybismaleimide, and polycarbonates; thermosetting resins, for example, formaldehyde resins such as phenol resins and melamine resins, allyl resins such as diallyl phthalate, epoxy resins, silicone resins, and polyurethane resins; and polymer blends of an unsaturated polyester resin and a vinyl ester resin as frequently used in fiber-reinforced plastics; ceramics and glass. The particular material, shape, and size of the substrate used may be properly selected depending on the intended application." (see column 5, lines 21-41). However, Yoshikawa's disclosure refers to resins, ceramics and glass, but does not disclose fibers.

Accordingly, Yoshikawa does not suggest the treatment of organic fibers.

Therefore, Marshall, which shows polyester yarn, has no relevance to Yoshikawa.

Further, even if Marshall were combined with Yoshikawa, the combination still does not teach the present invention. If polyester yarn, which is a twisted cord, were to be treated by the method of the present invention, the inner or concaved surface of the polyester yarn, which is generated by twisting, would not be sufficiently treated.

An organic or inorganic fiber which is substantially non-bundled is treated in the present invention and then the fibers may be further processed to various forms according to the end use of rubber articles or rubber members by a method known in the fiber processing art, for example, by twisting, knitting, processing to short fibers and processing to nonwoven fabric. The form of the processed fibers may include, for example, multifilament cord, multimono filament cord, cable, cord fabric, short fiber, nonwoven fabric and canvas (see page 19, lines 6 to 14).

Thus, it would not have been *prima facie* obvious to achieve the present invention by combining Marshall's conventionally known polyester yarn in Yoshikawa's rubber composite material.

Dependent Claims 2-4, 6-7, 9-12 and 22-23 are patentable based on at least their dependency to independent Claim 1.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a).

Double Patenting Rejection

A. Claim 9 is objected to under 37 C.F.R. §1.75 as assertedly being a substantial duplicate of claim 8.

Applicants respond as follows. Claim 8 is canceled. Accordingly, Applicants respect reconsideration and withdrawal of the objection to Claim 9.

B. Claims 1-2 and 22-23 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as assertedly being unpatentable over claims 1-2 of copending Application No. 09/960,345 in view of Honda, et al (U.S. Pat. No. 3,705,868).

The copending application is characterized as being drawn to a rubber-based composite material comprising a non-woven fabric and a coating of a metal or metallic compound reactable with sulfur wherein said compound can be cobalt or an oxide of cobalt. The Examiner asserts that formation of fibers into fabrics is an obvious variant and that Honda teaches polyester fibrous material for reinforcing rubber articles, wherein the fibrous material can be in the form of filaments, fabrics or canvas.

Applicants respectfully traverse the double patenting rejection.

Claims 1-2 of copending Application No. 09/960,345 in view of Honda, et al. fail to render obvious the present invention. For example, the copending Claims 1-2 fail to render obvious at least the recitations in present Claim 1 of “the organic fiber or the inorganic fiber being provided with a coating layer of 10 Å to 40 µm thick”, as well as the newly added recitation “wherein the organic fiber or the inorganic fiber is substantially non-bundled.”

Accordingly, Applicants respectfully request reconsideration and withdrawal of the

double patenting rejection.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

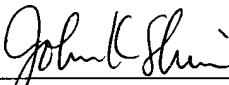
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